

## Range extension for the White-striped Freetail Bat *Tadarida australis* in the Northern Territory, from Anabat recording

D.J. Milne and K.L. Nash

Department of Infrastructure, Planning and Environment, PO Box 496,  
Palmerston, Northern Territory, 0831.

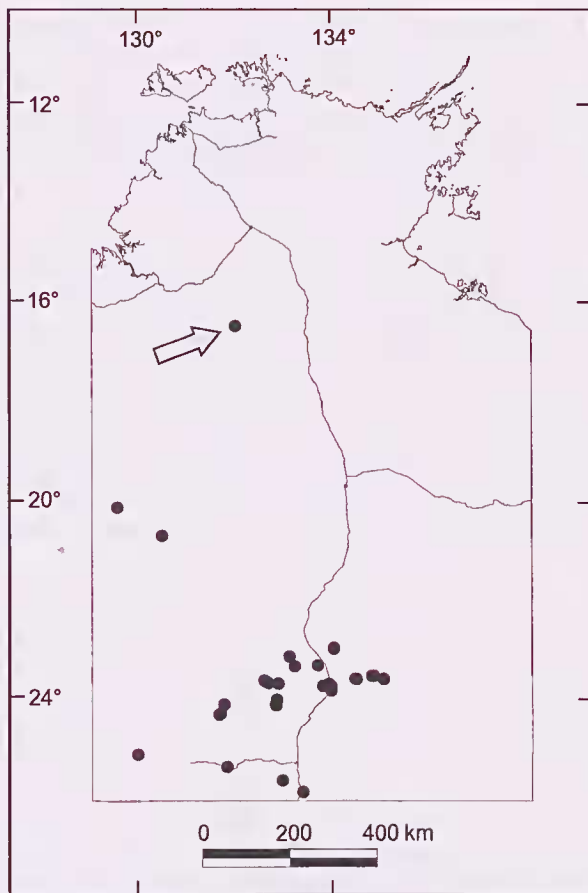
Microchiropteran bats echolocate using ultrasonic vocalisations that are distinct and diagnostic for many species. As a consequence bat detectors provide an effective and accurate means to survey and identify free-flying bats (e.g. Law *et al.* 1999, Young and Ford 2000). This is particularly true for species that are high-flying and forage above the tree canopy, so are rarely caught by traditional trapping techniques. Here we describe a significant range extension for one such species, resulting from surveys using Anabat detectors.

At 9.30pm on the 20th May 1999, KN recorded a series of bat call sequences on Killarney station (16° 28' S 131° 55' E; Figure 1) during a quadrat-based census. The census, involving approximately 18 hours of recording across 107 sites, formed part of a vertebrate fauna survey of the Victoria River region of the Northern Territory. Bat calls were detected using a hand-held Anabat II detector (Titley Electronics, Ballina, NSW) and recorded directly to audio cassette. The calls were subsequently analysed using zero crossing analysis and Analook software (Corben & O'Farrell 1999).

The characteristic frequency (cf. de Oliveira 1998) of one call sequence was measured between 11 and 12 kHz (Figure 2), much lower than calls recorded from any of the bat species known to occur in the Top End (Milne 2002). We attributed this call sequence to the White-Striped Freetail Bat *Tadarida australis*, a large molossid bat that occurs primarily south of the Tropic of Capricorn (Churchill 1998). The sequence was identified by examining a set of unpublished reference calls and confirmed by a number of bat experts around Australia. The call is also consistent with that described for *T. australis* by a number of other sources (Fullard *et al.* 1991, Herr & Klomp 1997, McKenzie & Muir 2000). We regarded the call sequence as appropriate for analysis due to its regular and consistent pulse shape over an extended period (15 seconds).

*Tadarida australis* has not previously been reported from the tropical savannas of the Northern Territory, this record representing a northerly range extension of c. 400 km. Killarney Station lies on the margins of the Sturt Plateau and Victoria River basin and is predominantly flat to undulating rises, with eucalypt savanna on red calcareous loam

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**Figure 1.** Previous records of *Tadarida australis* in the Northern Territory (PWCNT Fauna Database) with the new record from Killarney Station indicated by an arrow.

soils. The vegetation at the recording site was low open woodland dominated by *Eucalyptus pruinosa*, with a canopy height of 6-7 metres.

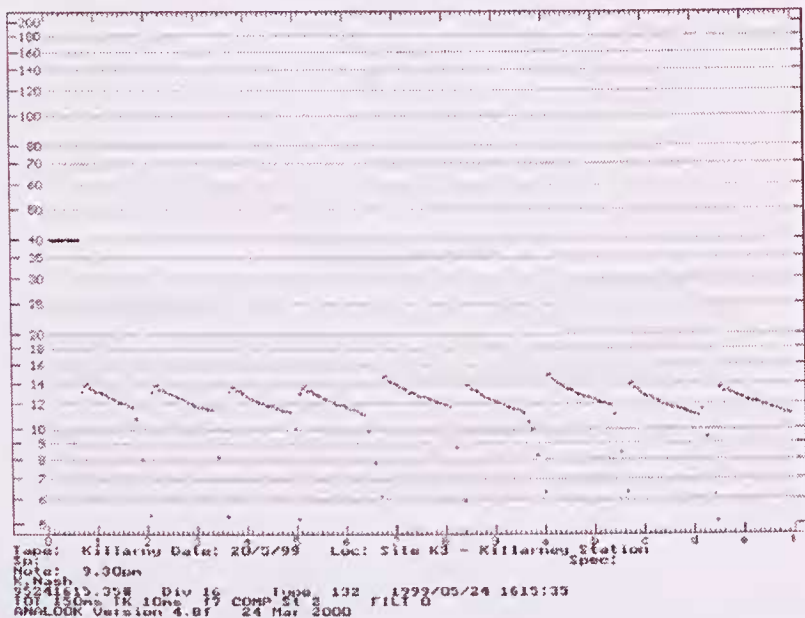
## Discussion

Although considerably north of all previous N.T. records (and possibly the most northerly record in Australia), this record of *T. australis* may not indicate a disjunct population. Rather, it likely reflects the inadequate survey effort for bats and paucity of all bat records throughout the northern N.T. In northern Queensland, a specimen of *T. ans-*

*tralis* was recently collected at Atherton ( $17^{\circ} 16' S 145^{\circ} 29' E$ ) in August 1998 (Anon 2001). However, the most northern specimen of this species held by the Queensland Museum was collected from Mt. Carbine ( $16^{\circ} 32' S 145^{\circ} 08' E$ ) around 1943.

The date of our observation (late May) is consistent with the suggestion that *T. australis* may migrate north during the southern Australian winter (Churchill 1998, Lumsden 1999). Although common at other times, this species is apparently virtually absent from Victoria between June to August (Churchill, 1998).

One caveat to our identification of the Anabat call sequence is the possibility that the call may have been produced by *Saccolaimus saccolaimus*, for which there are no published reference calls. This species is known to occur in the Northern Territory (McKean *et al* 1981), although has not been detected for many years. McKean collected specimens by listening for their high-pitched, audible sonar clicks and locating them with a spotlight before they were shot (A. Hertog pers. comm.). Therefore, it is likely that *S. saccolaimus* has an audible echolocation frequency at or below 20 kHz. While we cannot rule out the possibility that the call we recorded may be attributable to this species, the similarity to calls recorded for *T. australis* from elsewhere in Australia is compelling.



**Figure 2.** Anulook display showing portion of the call sequence identified as *Tadarida australis*. There was minor editing of the sequence to show the calibration tone.

We recommend the continued use of ultrasonic detection and identification systems, in concert with traditional trapping methods, to survey areas where the bat fauna is poorly known. Along with the refinement of a comprehensive Anabat call reference library for bats of the Northern Territory (Milne 2002), this will continue to provide a better understanding of the distribution patterns of Australian bats and enable us to better conserve and manage this poorly studied group.

## Acknowledgments

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